CLAIMS:

1) A server for use in a communications network having a plurality of client NEs, said server comprising:
   a) an I/O for exchanging control messages with the client NEs;
   b) a processing entity for implementing a routing function that provides routing resources to the client NEs;
   c) said processing entity operative to interact with a database including true topology information about the client NEs during implementation of said routing function.

2) A server as defined in claim 1, wherein said processing entity implements said routing function by running a single instance of a routing protocol.

3) A server as defined in claim 2, wherein the routing protocol is a distributed routing protocol.

4) A server as defined in claim 3, wherein said routing protocol is selected in the group consisting of OSPF, IS-IS and PNNI and a routing protocol based on either one of OSPF, IS-IS and PNNI.

5) A server as defined in claim 2, wherein said routing function is operative to perform computation of a path through the communications network for transporting data, where the source node of the path is any one of the client NEs.

6) A server as defined in claim 2, wherein said routing function is operative to advertise the existence of each

client NE to a peer routing instance in the communications network.

7) A server as defined in claim 2, wherein said routing function is operative to advertise link resources associated with each client NE to a peer routing instance in the communications network.

8) A server as defined in claim 2, wherein said routing function is operative for receiving advertisements from a peer routing instance in the communications network about existence of NEs, other than the client NEs.

9) A server as defined in claim 2, wherein said routing function is operative for receiving advertisements from a peer routing instance in the communications network about link resources associated with NEs, other than the client NEs.

10) A server as defined in claim 2, wherein said routing function is operative for acquiring information from the client NEs about link resources associated with each client NE.

11) A server as defined in claim 4, wherein the communications network includes a control plane, said server being part of the control plane.

12) A server as defined in claim 10, wherein the communications network includes a bearer plane, said server being excluded from the bearer plane.

13) A server as defined in claim 11, wherein each client NE is selected in the group consisting of a packet switch and a SONET cross-connect.

14) A server as defined in claim 2, wherein said server includes the database.

15) A computer readable storage medium including a program element for execution on server in a communications network having a plurality of client NEs, the program element implementing a routing function for providing routing resources to multiple client NEs, said program element operative to interact with a database including true topology information.

16) A computer readable storage medium as defined in claim 15, wherein said program element implements said routing function by running a single instance of a routing protocol.

17) A computer readable storage medium as defined in claim 16, wherein the routing protocol is a distributed routing protocol.

18) A computer readable storage medium as defined in claim 17, wherein said routing protocol is selected in the group consisting of OSPF, IS-IS and PNNI and a routing protocol based on either one of OSPF, IS-IS and PNNI.

19) A computer readable storage medium as defined in claim 16, wherein said single instance of the routing function is operative to perform computation of a path through the communications network for transporting

data, where the source node of the path includes at least one of the client NEs.

20) A computer readable storage medium as defined in claim 16, wherein said single instance of the routing function is operative to advertise the existence of each client NE to a peer routing instance in the communications network.

21) A computer readable storage medium as defined in claim 16, wherein said single instance of the routing function is operative to advertise link resources associated with each client NE to a peer routing instance in the communications network.

22) A computer readable storage medium as defined in claim 16, wherein said single instance of the routing function is operative for receiving advertisements from a peer routing instance in the communications network about existence of NEs, other than the client NEs.

23) A computer readable storage medium as defined in claim 16, wherein said single instance of the routing function is operative for receiving advertisements from a peer routing instance in the communications network about link resources associated with NEs, other than the client NEs.

24) A computer readable storage medium as defined in claim 16, wherein said single instance of the routing function is operative for acquiring information from the client NEs about link resources associated with each client NE.

25) A method for providing a routing function in a communications network, the method comprising:

a) providing in the communications network a server capable of exchanging control messages with a plurality of client NEs in the communications network;

b) implementing a routing function on the server providing routing resources to the plurality of client NEs;

c) allowing the routing function to interact with a database holding true topology information about the client NEs.

26) A method as defined in claim 23, including implementing said routing function by running a single instance of a routing protocol.

27) A method as defined in claim 26, wherein the routing protocol is a distributed routing protocol.

28) A method as defined in claim 27, wherein said routing protocol is selected in the group consisting of OSPF, IS-IS and PNNI and a routing protocol based on either one of OSPF, IS-IS and PNNI.

29) A method as defined in claim 26, wherein the implementing of the routing function includes computing a path through the communications network for transporting data, wherein the source node of the path includes at least one of the client NEs.

30) A method as defined in claim 26, wherein the implementing of the routing function includes

advertising the existence of each client NE to a peer routing instance in the communications network.

31) A method as defined in claim 26, wherein the implementing of the routing function includes advertising link resources associated with each client NE to a peer routing instance in the communications network.

32) A method as defined in claim 26, wherein the implementing of the routing function includes receiving advertisements from a peer routing instance in the communications network about existence of NEs, other than the client NEs.

33) A method as defined in claim 26, wherein the implementing of the routing function includes receiving advertisements from a peer routing instance in the communications network about link resources associated with NEs, other than the client NEs.

34) A method as defined in claim 26, wherein the implementing of the routing function includes acquiring information from the client NEs about link resources associated with each client NE.

35) A method for upgrading a communications network having a plurality of NEs, comprising:

a) providing in the communications network a server;

b) implementing on the server a routing function shared among the plurality of NEs.

36) A method as defined in claim 35, wherein the method is effected without upgrading any one of the plurality of NEs.

37) A method as defined in claim 33, including implementing said routing function by running a single instance of a routing protocol.

38) A method as defined in claim 37, wherein the routing protocol is a distributed routing protocol.

39) A method as defined in claim 38, wherein said routing protocol is selected in the group consisting of OSPF, IS-IS and PNNI and a routing protocol based on either one of OSPF, IS-IS and PNNI.

40) A method as defined in claim 37, wherein the implementing of the routing function includes computing a path through the communications network for transporting data, wherein the path includes at least one of the plurality NEs as a source node for the path.

41) A method as defined in claim 37, wherein the implementing of the routing function includes advertising the existence of each of the plurality of NEs to a peer routing instance in the communications network.

42) A method as defined in claim 37, wherein the implementing of the routing function includes advertising link resources associated with each of the plurality of NEs to a peer routing instance in the communications network.

43) A method as defined in claim 37, wherein the implementing of the routing function includes receiving advertisements from a peer routing instance in the communications network about existence of NEs, other than the plurality of NEs.

44) A method as defined in claim 37, wherein the implementing of the routing function includes receiving advertisements from a peer routing instance in the communications network about link resources associated with NEs, other than the plurality of NEs.

45) A method as defined in claim 37, wherein the implementing of the routing function includes acquiring information from the client NEs about link resources associated with each client NE.

46) A method as defined in claim 35, comprising providing a database including true topology information about the plurality of NEs and allowing the routing function to interact with said database.

47) A method as defined in claim 46, comprising providing the database in the server.

48) A method for providing a control plane to a communications network that does not have a control plane, said method comprising:

a) providing a server in the communications network that can exchange control messages with a plurality of NEs of the communications network, the NEs being part of a bearer plane of the communications network;

b) implementing on the server a routing function providing routing resources to the plurality of NEs.

49) A method as defined in claim 48, wherein the bearer plane excludes the server.